

FOS CDR RID Report

Date Last Modified 1/18/96

Originator Curt Schroeder

Phone No 286-5027

Organization 505

E Mail Address curts@rattler.gsfc.nasa.gov

Document

RID ID	CDR 12
Review	FOS
Originator Ref	CAS-2
Priority	2

Section

Page

Figure Table

Category Name Requirements

Actionee ECS

Sub Category

Subject Ground time synchronization

Description of Problem or Suggestion:

- It was not clear what the ground time synchronization requirements are. For example, system-wide (including IST) accuracy.
- It was not explained how time synchronization requirement is achieved over the NSI. NSI has multiple and variable paths and buffer displays.

Originator's Recommendation

- Provide Level 4 time synchronization requirements for accuracy, resolution, update rate, etc.
- Confirm with NSI, and explain how NSI will support this requirement.

GSFC Response by:

GSFC Response Date

HAIS Response by: Andy Miller

HAIS Schedule

HAIS R. E. Scott Carter

HAIS Response Date 11/10/95

The time reference utilized by the FOS, as defined in the baseline requirements, is obtained from the government furnished NASA-36 bit serial time code signal. The NASA-36 time reference is available at the EOC with an accuracy of 500 milliseconds. The current status of these requirements was briefed at the FOS CDR in the "FOS Network Architecture" presentation. Once finalized, the performance requirements for EOC-IST communication will be specified in the ESDIS-NSI IRD/ICD (which will contain such things as average throughput, latency, etc.). A level-4 requirement will be added stating that the FOS will provide the ability to keep the IST workstation system clock to within + - 500 milliseconds of the NASA-36 supplied time (GMT) in the EOC.

Time synchronization between the EOC and ISTs is achieved over the NSI via the Distributed Time Services (DTS). The DTS consists of time servers and time clerks. The NASA-36 time reference is fed to the DTS servers in the EOC. EOC and IST workstations will contain a DTS time clerk to receive time transferred over the EOC LAN and NSI, respectively, by the DTS server. The DTS time clerk at each workstation updates the system clock rate to synchronize the workstation system clock with the source time. The DTS time clerk applies an algorithm during synchronization to account for nominal delays in transfer through NSI. The algorithm associated with the DTS is configurable and delays through NSI are expected to fall within the envelope of the 500 millisecond accuracy requirement. In support of future missions, the DTS clerk at the IST workstation can be switched to allow for time to be served from a source outside the scope of the FOS, such as GPS, which satisfies the future accuracy requirements.

For instrument workstations that host multiple ECS toolkits, the user has the capability to disable the DTS clerk. Disabling the DTS clerk at an instrument workstation presumes that the workstation can be configured to receive time, referenced to UTC, from one toolkit with at least the same accuracy as that provided by the DTS server/clerk.

Status Closed

Date Closed 1/17/96

Sponsor Johns

***** Attachment if any *****